UNITED STATES PATENT AND TRADEMARK OFFICE

NOTICE OF ALLOWANCE AND FEE(S) DUE

37945   7590   12/28/2009

DUKE W. YEE
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P.O. BOX 802333
DALLAS, TX 75380

EXAMINER
VEZERIS, JAMES A

ART UNIT	PAPER NUMBER
3693	

DATE MAILED: 12/28/2009

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/768,334	01/29/2004	Robert Lee Angell	END20030132US1	6534

TITLE OF INVENTION: INCREMENTAL COMPLIANCE ENVIRONMENT, AN ENTERPRISE-WIDE SYSTEM FOR DETECTING FRAUD

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	$1510	$300	$0	$1810	03/29/2010

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.

HOW TO REPLY TO THIS NOTICE:

I. Review the SMALL ENTITY status shown above.

If the SMALL ENTITY is shown as YES, verify your current SMALL ENTITY status:

A. If the status is the same, pay the TOTAL FEE(S) DUE shown above.

B. If the status above is to be removed, check box 5b on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and twice the amount of the ISSUE FEE shown above, or

If the SMALL ENTITY is shown as NO:

A. Pay TOTAL FEE(S) DUE shown above, or

B. If applicant claimed SMALL ENTITY status before, or is now claiming SMALL ENTITY status, check box 5a on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and 1/2 the ISSUE FEE shown above.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), to: <u>Mail</u>

Mail Stop ISSUE FEE
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

or <u>Fax</u> (571)-273-2885

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

| 37945 | 7590 | 12/28/2009 |

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Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission
I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

_____ (Depositor's name)

_____ (Signature)

_____ (Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/768,334	01/29/2004	Robert Lee Angell	END20030132US1	6534

TITLE OF INVENTION: INCREMENTAL COMPLIANCE ENVIRONMENT, AN ENTERPRISE-WIDE SYSTEM FOR DETECTING FRAUD

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	$1510	$300	$0	$1810	03/29/2010

EXAMINER	ART UNIT	CLASS-SUBCLASS
VEZERIS, JAMES A	3693	705-035000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

❏ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.

❏ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list

(1) the names of up to 3 registered patent attorneys or agents OR, alternatively,

(2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

1 _____

2 _____

3 _____

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE   (B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent) : ❏ Individual ❏ Corporation or other private group entity ❏ Government

4a. The following fee(s) are submitted:

❏ Issue Fee

❏ Publication Fee (No small entity discount permitted)

❏ Advance Order - # of Copies _____

4b. Payment of Fee(s): (Please first reapply any previously paid issue fee shown above)

❏ A check is enclosed.

❏ Payment by credit card. Form PTO-2038 is attached.

❏ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment, to Deposit Account Number _____ (enclose an extra copy of this form).

5. Change in Entity Status (from status indicated above)

❏ a. Applicant claims SMALL ENTITY status. See 37 CFR 1.27.

❏ b. Applicant is no longer claiming SMALL ENTITY status. See 37 CFR 1.27(g)(2).

NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

Authorized Signature _____

Date _____

Typed or printed name _____

Registration No. _____

This collection of information is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

PTOL-85 (Rev. 08/07) Approved for use through 08/31/2010.   OMB 0651-0033   U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

UNITED STATES PATENT AND TRADEMARK OFFICE

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VEZERIS, JAMES A

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DATE MAILED: 12/28/2009

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)
(application filed on or after May 29, 2000)

The Patent Term Adjustment to date is 1004 day(s). If the issue fee is paid on the date that is three months after the mailing date of this notice and the patent issues on the Tuesday before the date that is 28 weeks (six and a half months) after the mailing date of this notice, the Patent Term Adjustment will be 1004 day(s).

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (http://pair.uspto.gov).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

PTOL-85 (Rev. 08/07) Approved for use through 08/31/2010.

	Application No.	Applicant(s)
Notice of Allowability	10/768,334	ANGELL, ROBERT LEE
	Examiner	Art Unit
	JAMES A. VEZERIS	3693

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to *8/27/2009*.

2. ☒ The allowed claim(s) is/are *1-3,7-15 and 19-25*.

3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a) ☐ All   b) ☐ Some*   c) ☐ None   of the:

        1. ☐ Certified copies of the priority documents have been received.

        2. ☐ Certified copies of the priority documents have been received in Application No. _____ .

        3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the
           International Bureau (PCT Rule 17.2(a)).

    * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF
    INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.

    (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached

        1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.

    (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of
        Paper No./Mail Date _____.

    **Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of
    each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).**

6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the
    attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)

2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)

3. ☐ Information Disclosure Statements (PTO/SB/08),
    Paper No./Mail Date _____

4. ☐ Examiner's Comment Regarding Requirement for Deposit
    of Biological Material

5. ☐ Notice of Informal Patent Application

6. ☐ Interview Summary (PTO-413),
    Paper No./Mail Date _____ .

7. ☒ Examiner's Amendment/Comment

8. ☒ Examiner's Statement of Reasons for Allowance

9. ☐ Other _____.

/JAMES A VEZERIS/
Examiner, Art Unit 3693

Detailed Action

1.   The following communication is in response to an amendment entered

8/27/2009.

Status of Claims

2.   Claims 1, 13-15, 19-25 are currently amended.

3.   Claims 2, 3, and 7-12 are previously presented.

4.   Claims 1-3, 7-15, and 19-25 are currently pending.

Allowable Subject Matter

5.   Claims 1-3, 7-15, and 19-25 are allowed for the reasons discussed below.

Examiner's Amendment

6.   An examiner's amendment to the record appears below. Should the changes

and/or additions be unacceptable to applicant, an amendment may be filed as provided

by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be

submitted no later than the payment of the issue fee.

        Authorization for this examiner's amendment was given in a telephone interview

with Rudolf Siegesmund on 12/1/2009.

Claim 13.

A program storage device readable by a machine, tangibly embodying a program

of instructions executable by the machine to perform a method to detect fraudulent

activity, said method ~~steps~~ comprising:

receiving a set of historical data stored in a customer behavior database;

identifying a plurality of control points in the set of historical data using a data

analysis module, further comprising:

performing a statistical analysis on the set of historical data for identifying

a plurality of outliers, wherein the plurality of outliers are identified by the

statistical analysis as a set of significantly different data points in a distribution of

the set of historical data; and

performing data mining techniques on the plurality of outliers to distinguish

between a first set of outliers and a second set of outliers, wherein the first set of

outliers are classified by the data mining techniques as non-fraudulent outliers

and the second set of outliers are classified by the data mining techniques as

fraudulent outliers, and wherein the first set of outliers are identified as the

plurality of control points;

instructions for building at least one data model based on the plurality of control

points, further comprising:

generating a fence that passes through the plurality of control points to

define a boundary between data points, wherein the fence comprises line

segments connecting the plurality of control points to form a continuous line for

the boundary, and wherein data points inside or on the boundary of the fence

represent acceptable behavior and data points outside the boundary of the fence

represent fraudulent behavior;

receiving a set of updated data, wherein the set of updated data includes a

plurality of current data stored in the customer behavior database;

identifying one or more new control points based on the set of updated data

using the data analysis module, further comprising:

performing a statistical analysis on the set of updated data for identifying

an additional plurality of outliers, wherein the additional plurality of outliers are

identified by the statistical analysis as an additional set of significantly different

data points in a distribution of the set of updated data; and

performing data mining techniques on the additional plurality of

outliers to distinguish between a third set of outliers and a fourth set of outliers,

wherein the third set of outliers are classified by the data mining techniques as

non- fraudulent outliers and the fourth set of outliers are classified by the

data mining techniques as fraudulent outliers, and wherein the third set of

outliers are identified as the one or more new control points;

adjusting the at least one data model to form an adjusted fence, within the at

least one data model, based on the one or more new control points, wherein the at least

one data model is refined for a plurality of iterations, further comprising:

generating the adjusted fence that passes through the plurality of control

points and the one or more new control points to define a new boundary between

data points, wherein the adjusted fence comprises line segments connecting the

plurality of control points and the one or more new control points to form a new

continuous line for the new boundary, and wherein data points inside or on the

new boundary of the adjusted fence represent acceptable behavior and data

points outside the new boundary of the adjusted fence represent fraudulent

behavior; and

verifying a transaction based on the adjusted fence.

Reasons for Allowance

7.   The closest prior art that the examiner has been able to locate is Yamanishi et al,

U.S. Patent 7,353,214. Yamanishi provides a method for detecting abnormal data using

filtering and outlier calculations. The method, given in Yamanishi, established an outlier

rule by determining the degree an outlying piece of data was from normal data. Rules

are then constructed and adapted based on known outliers. These rules allow the

method to efficiently detect outliers from future data.

While Yamanishi is similar to the instant application in many aspects, there are

clear patentable distinctions. Initially, Yamanishi does not teach generating a fence that

passes through a plurality of control points to define a line which on one side are valid

outliers and on the other invalid outliers.

Secondly, Yamanishi does not teach verifying a transaction based on the fence

created. In the present application the system makes a determination to either accept or

decline a transaction based on the fence that is created. Yamanishi returns outliers but

does not make the determination to accept or decline the transaction.

The examiner would like to add an additional comment based on U.S. Patent

7,333,923 to Yamanishi et al. Examiner relied on this piece of art to complete a 103(a)

rejection, stating it teaches making a determination to either accept or decline a

transaction. Examiner still believes Yamanishi '923 teaches making the determinations,

but since '214 does not teach generating a fence the 103 rejection could not stand.

The following is a formal statement of reasons for allowance:

Claims 1, 13, and 25 are allowed because the best prior art of record, Yamanishi,

alone or in combination, neither discloses nor fairly suggest the limitations, system or in

a method, and associated computer readable medium with instruction encoded thereon,

for performing a method for order entry in an automated trading environment having at

least one accessible electronic exchange to trade at, comprising the steps of:

receiving a set of historical data stored in a customer behavior database;

identifying a plurality of control points in the set of historical data using a data analysis module, further comprising:
>*performing a statistical analysis on the set of historical data for identifying a plurality of outliers, wherein the plurality of outliers are identified by the statistical analysis as a set of significantly different data points in a distribution of the set of historical data; and*
>*performing data mining techniques on the plurality of outliers to distinguish between a first set of outliers and a second set of outliers, wherein the first set of outliers are classified by the data mining techniques as non-fraudulent outliers and the second set of outliers are classified by the data mining techniques as fraudulent outliers, and wherein the first set of outliers are identified as the plurality of control points;*

building at least one data model based on the plurality of control points, further comprising:
>*generating a fence that passes through the plurality of control points to define a boundary between data points, wherein the fence comprises line segments connecting the plurality of control points to form a continuous line for the boundary, and wherein data points inside or on the boundary of the fence represent acceptable behavior and data points outside the boundary of the fence*

represent fraudulent behavior;

receiving a set of updated data, wherein the set of updated data includes a plurality of current data stored in the customer behavior database;

identifying one or more new control points based on the set of updated data using the data analysis module, further comprising:
performing a statistical analysis on the set of updated data for identifying an additional plurality of outliers, wherein the additional plurality of outliers are identified by the statistical analysis as an additional set of significantly different data points in a distribution of the set of updated data; and
performing data mining techniques on the additional plurality of outliers to distinguish between a third set of outliers and a fourth set of outliers, wherein the third set of outliers are classified by the data mining techniques as non- fraudulent outliers and the fourth set of outliers are classified by the data mining techniques as fraudulent outliers, and wherein the third set of outliers are identified as the one or more new control points;

adjusting the at least one data model to form an adjusted fence, within the at least one data model, based on the one or more new control points, wherein the at least one data model is refined for a plurality of iterations, further comprising:
generating the adjusted fence that passes through the plurality of control points and the one or more new control points to define a new boundary between data points, wherein the adjusted fence comprises line segments connecting the plurality of control points and the one or more new control points to form a new continuous line for the new boundary, and wherein data points inside or on the new boundary of the adjusted fence represent acceptable behavior and data points outside the new boundary of the adjusted fence represent fraudulent behavior; and

verifying a transaction based on the adjusted fence.

Claims 2, 3, 7-12, 14, 15, and 19-24 are also allowable for the same reason discussed above, in that they are dependent on allowed Claims 1, 13, and 14. As a final matter any comments considered necessary by Applicant must be submitted no later than the payment of the issue fee and; to avoid processing delays, should preferably accompany the issue fee. Such submission should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JAMES A. VEZERIS whose telephone number is (571)270-1580. The examiner can normally be reached on Monday-alt. Fridays 7:30am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James Kramer can be reached on 571-272-6803. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/James A. Kramer/   /JAMES A VEZERIS/
Supervisory Patent Examiner, Art Unit 3693   Examiner, Art Unit 3693

November 24, 2009